

REMARKS

The final Office Action rejects claims 10, 11, 20, 21, 23, and 24 under 35 U.S.C. § 101 as directed to non-statutory subject matter; rejects claim 25 under 35 U.S.C. § 102(e) as anticipated by NAJORK et al. (U.S. Patent No. 6,263,364; referred to hereinafter as "NAJORK '364"); and rejects claims 1-24 under 35 U.S.C. § 103(a) as unpatentable over NAJORK et al. (U.S. Patent No. 6,321,265; referred to hereinafter as "NAJORK '265") in view of NAJORK '364. Applicants respectfully traverse these rejections.

By the present amendment, Applicants propose canceling claims 4, 6, 15, and 25 without prejudice or disclaimer, amending claims 1, 5, 7, 10, 12, 16-18, and 20 to improve form, and adding new claim 26. No new matter has been added by way of the present amendment. Claims 1-3, 5, 7-14, 16-24, and 26 would be pending upon entry of the present amendment.

REJECTION UNDER 35 U.S.C. § 101

Claims 10, 11, 20, 21, 23, and 24 stand rejected under 35 U.S.C. § 101 as allegedly directed to non-statutory subject matter. In particular, the final Office Action alleges that "[d]ependent claims 11 and 21 include a 'carrier wave' which is non-statutory because it does not fit into any of the three product statutory classes because it is non-physical" (final Office Action, pg. 2). The final Office Action further alleges that "[c]laims 10, 11, 20, 21, 23, and 24 are not limited to tangibly embodied computer readable mediums ... [a]s such, the claim is not limited to statutory subject matter and is therefore non-statutory" (final Office Action, pg. 15). Applicants respectfully traverse.

The final Office Action provides no basis for rejecting claims 10, 11, 20, 21, 23, and 24 under 35 U.S.C. § 101. The mere fact that claims 11, 21, and 24 recite a carrier wave, **which is a type of computer-readable medium**, in no way means that these claims are per se non-statutory. The general allegation in the final Office Action is insufficient for establishing a *prima facie* basis for denying patentability. Applicants again invite the Examiner to review the U.S. Patent and Trademark's Examination Guidelines for Computer-Related Inventions and the examples, which include a carrier wave claim, provided at <http://www.uspto.gov/web/offices/pac/dapp/pdf/compenex.pdf> (see pages 37-39). Carrier wave claims are not per se non-statutory. The final Office Action provides no evidence to support the general allegation to the contrary.

The final Office Action also alleges that "[t]he claimed carrier wave has no physical structure, does not itself perform any useful, concrete and tangible result, and, thus, does not fit within the definition of a machine" (final Office Action, pg. 3). As clearly set forth in the M.P.E.P., claims to computer-related inventions that are clearly nonstatutory fall into one of three categories: natural phenomenon, abstract ideas, and laws of nature (see M.P.E.P. § 2106). The final Office Action does not provide any evidence that the features recited in claims 11, 21, and 24 fall into any of these three categories. Instead, the final Office Action generally alleges that these claims do not fit within the definition of a machine. The final Office Action does not establish a *prima facie* basis for denying patentability.

Applicants also note that the final Office Action alleges that claims 10, 20, and 23, from which claims 11, 21, and 24 depend, are directed to non-statutory subject matter

"because they recite a computer readable medium, which in view of Applicant's disclosure, specification page 6 line 19 - page 7 line 2, the medium is not limited to tangible embodiments, instead being defined as including both tangible embodiments (e.g., CD-ROM, floppy disk, tape, flash memory, system memory, and hard drive) and intangible embodiments (e.g., data signal embodied on a carrier wave)" (final Office Action, pp. 3-4). The final Office Action does not provide a *prima facie* basis for denying patentability. The mere fact that claims 10, 20, and 23 recite a computer-readable medium is in no way a per se indication that these claims are non-statutory.

For at least the foregoing reasons, Applicants request that the rejection of claims 10, 11, 20, 21, 23, and 24 under 35 U.S.C. § 101 be reconsidered and withdrawn.

REJECTION UNDER 35 U.S.C. § 102(e) BASED ON NAJORK '364

Claim 25 stands rejected under 35 U.S.C. § 102(e) as allegedly anticipated by NAJORK '364. Applicants propose canceling claim 25 herewith, thereby rendering the rejection of that claim moot.

REJECTION UNDER 35 U.S.C. § 103(a) BASED ON
NAJORK '265 AND NAJORK '364

Pending claims 1-3, 5, 7-14, and 16-24 stand rejected under 35 U.S.C. § 103(a) as allegedly unpatentable over NAJORK '265 in view of NAJORK '364. Applicants respectfully traverse with respect to the claims, as current amended.

Amended independent claim 1 is directed to a computer implemented method of crawling hyperlinked documents. The method includes sending a request for additional links to hyperlinked documents to a link manager; receiving a plurality of links to hyperlinked documents to be crawled, where the plurality of links is selected by the link

manager based on priority; grouping the plurality of links to hyperlinked documents by host; grouping hosts into buckets according to a number of hyperlinked documents to be crawled at each host; sorting the hosts in each bucket based on a stall time of each host; selecting a host from one of the buckets to crawl next according to the stall time of the host; and crawling a hyperlinked document from the selected host. NAJORK '265 and NAJORK '364 do not disclose or suggest at least one of these features.

For example, NAJORK '265 and NAJORK '364 do not disclose or suggest grouping hosts into buckets according to a number of hyperlinked documents to be crawled at each host. This feature is similar to a feature that was previously recited in claim 4. With respect to that claim, the final Office Action admits that NAJORK '265 does not disclose this feature and alleges "[i]t would have been obvious and desirable to have grouped the hosts according to the number of hyperlinked documents to be crawled so that the queues could have been balanced with hosts containing small numbers of documents combined to fill a queue with a workload equal to another queue containing a host with a large number of documents to be crawled" (final Office Action, pg. 6). Applicants disagree.

NAJORK '265 specifically discloses how hosts are assigned to queues. For example, at col. 7, lines 23-35, NAJORK '265 discloses:

The host identifier "H" of the new URL "u" is mapped into a queue identifier "r" using a suitable numerical function. For example, in one preferred implementation, a fingerprinting function is used to hash the host identifier "H" into an integer "I" (164). The integer "I" (which is sometimes called the "fingerprint of H") is divided by the number of queues in the system, such as "n", to get a remainder "r" between 0 and n-1 (166). In other words, r is set equal to the fingerprint of H modulo n. Examples of other possible numerical functions that could be used to map

the host identifier into a queue identifier are checksum or CRC functions, and simply hash functions based on bitwise operations.

Based on the above numerical function, NAJORK '265 selects a queue to store a URL (col. 7, lines 36-37). The final Office Action does not explain why one skilled in the art would have been motivated to change the very operation of the NAJORK '265 system to group hosts into buckets according to a number of hyperlinked documents to be crawled at each host, as required by amended claim 1. Moreover, it is unclear as to how grouping hosts into buckets according to a number of hyperlinked documents to be crawled at each host would result in NAJORK '265's queues being balanced with hosts. The allegation in the final Office Action is merely conclusory and insufficient for establishing a *prima facie* case of obviousness.

Since NAJORK '265 and NAJORK '364 do not disclose or suggest grouping hosts into buckets according to a number of hyperlinked documents to be crawled at each host, NAJORK '265 and NAJORK '364 cannot disclose or suggest sorting the hosts in each bucket based on a stall time of each host, as also required by amended claim 1. This feature is similar to a feature previously recited in claim 6. With respect to that claim, the final Office Action admits that NAJORK '265 does not disclose the above feature and alleges "[i]t would have been obvious and desirable to have done this [sort hosts according to stall times] so that the web crawler could have crawled the sites in a time-efficient order" (final Office Action, pg. 7). This motivation is merely conclusory. The final Office Action does not explain why one would change the operation of the NAJORK '265 system to include sorting the hosts in each bucket based on a stall time of each host, as required by amended claim 1. Moreover, the final Office Action does not

explain why incorporating sorting the hosts in each bucket based on a stall time of each host into the NAJORK '265 system would allow NAJORK '265's web crawlers to crawl in a more time-efficient order. Accordingly, a *prima facie* case of obviousness has not been established with respect to claim 1.

For at least the foregoing reasons, Applicants submit that claim 1 is patentable over NAJORK '265 and NAJORK '364, whether taken alone or in any reasonable combination.

Claims 2, 3, 5, and 7-9 depend from claim 1. Therefore, these claims are patentable over NAJORK '265 and NAJORK '364, whether taken alone or in any reasonable combination, for at least the reasons given above with respect to claim 1.

Amended independent claims 10, 12, and 20 recite features similar to features given above with respect to claim 1. Therefore, these claims are patentable over NAJORK '265 and NAJORK '364, whether taken alone or in any reasonable combination, for reasons similar to reasons given above with respect to claim 1.

Claim 11 depends from claim 10. Therefore, this claim is patentable over NAJORK '265 and NAJORK '364, whether taken alone or in any reasonable combination, for at least the reasons given above with respect to claim 10.

Claims 13, 14, and 16-19 depends from claim 12. Therefore, these claims are patentable over NAJORK '265 and NAJORK '364, whether taken alone or in any reasonable combination, for at least the reasons given above with respect to claim 12.

Claim 21 depends from claim 20. Therefore, this claim is patentable over NAJORK '265 and NAJORK '364, whether taken alone or in any reasonable combination, for at least the reasons given above with respect to claim 20.

Independent claim 22 is directed to a computer implemented method of crawling hyperlinked documents. The method includes storing a plurality of links to hyperlinked documents to be crawled; determining that more links to hyperlinked documents are desired; sending requests to multiple link managers for more links to hyperlinked documents; receiving additional links to hyperlinked documents from the link managers; selecting a host to crawl next according to a stall time of the host; and crawling a hyperlinked document from the selected host. NAJORK '265 and NAJORK '364 do not disclose or suggest this combination of features.

For example, NAJORK '265 and NAJORK '364 do not disclose or suggest sending requests to multiple link managers for more links to hyperlinked documents. The final Office Action admits that NAJORK '265 does not disclose this feature and alleges that "[i]t would have been obvious ... to have modified the Frontier queuing and indexing system of the combination to have operated the queues as a individual link managers so that links could have still be provided to the web crawler in the event one of the queues experienced an interrupted connection with the web crawler" (final Office Action, pg. 13). Applicants submit that the above allegation does not address the above feature of claim 22.

Claim 22 recites sending requests to multiple link managers for more links to hyperlinked documents. Therefore, even if, as alleged in the final Office Action,

NAJORK '265's Frontier queuing and indexing system could reasonably operate as a link manager (a point that Applicants do not concede), the final Office Action does not explain how or why one skilled in the art would seek to modify NAJORK '265's system to include multiple link managers to which requests for more links to hyperlinked documents can be made. Accordingly, the final Office Action does not establish a *prima facie* case of obviousness with respect claim 22.

NAJORK '265 discloses that indexing system 116 includes an index of words used on the world wide web and addresses of the web pages that use each word (col. 4, lines 63-65). NAJORK '265 also discloses that web crawler 102 can access indexing system 116 in the process of downloading web pages from the world wide web (col. 4, lines 67, to col. 5, line 3). NAJORK '265 does not disclose or suggest, however, that indexing system 116 receives requests for more links to hyperlinked documents or sends additional links to hyperlinked documents. Therefore, the allegation in the final Office Action that indexing system 116 can somehow be construed to be a link manager is unsupported by the NAJORK '265 disclosure.

Further with respect to the above feature of claim 22, the final Office Action alleges "the Frontier data structure queues organize and manage links to hyperlinked documents and act as link managers for the web crawler. Each link queue manages links from a specific host to provide to the web crawler and thus is similar to each of the claimed link managers" (final Office Action, pg. 16). Applicants disagree.

NAJORK '265 discloses that when a new URL is discovered, the new URL is passed to demux 126, which enqueues the new URL into an appropriate queue 128 based

on a predetermined policy (Fig. 2; col. 6, lines 7-13). When a thread 130 is ready to dequeue from one of queues 128, the head URL in the queue assigned to that thread is dequeued from that queue by mux 124 and is passed to the thread for processing (col. 6, lines 15-18). NAJORK '265 does not disclose or suggest that queues 128 organize and manage links to hyperlinked documents, as the final Office Action alleges. The final Office Action does not point to any section of NAJORK '364 or NAJORK '265 that supports this general allegation.

For at least the foregoing reasons, Applicants submit that claim 22 is patentable over NAJORK '265 and NAJORK '364, whether taken alone or in any reasonable combination.

Independent claim 23 recites features similar to features recited above with respect to claim 22. Therefore, Applicants submit that claim 23 is patentable over NAJORK '265 and NAJORK '364, whether taken alone or in any reasonable combination, for reasons similar to the reasons given above with respect to claim 22.

Claim 24 depends from claim 23. Therefore, Applicants submit that this claim is patentable over NAJORK '265 and NAJORK '364, whether taken alone or in any reasonable combination, for at least the reasons given above with respect to claim 23.

New independent claim 26 is directed to a method for crawling hyperlinked documents. The method includes grouping links to hyperlinked documents by host, where each host is associated with a stall time; grouping hosts into buckets according to a number of hyperlinked documents to be crawled at each host; sorting the hosts in each bucket based on the stall time of each host; and identifying a host to crawl by examining

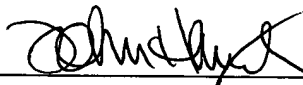
the buckets in descending order based on the number of hyperlinked documents to be crawled at each host until a host is found with a stall time that is earlier than a current time. For reasons similar to reasons given above, NAJORK '265 and NAJORK '364, whether taken alone or in any reasonable combination, do not disclose or suggest at least one of these features.

In view of the foregoing amendment and remarks, Applicants respectfully request the reconsideration of this application, and the timely allowance of the pending claims. Applicants respectfully request that the present amendment be entered since the amendment does not raise new issues and places the application in better condition for appeal. Moreover, Applicants submit that the present amendment places the application in immediate condition for allowance.

To the extent necessary, a petition for an extension of time under 37 C.F.R. § 1.136 is hereby made. Please charge any shortage in fees due in connection with the filing of this paper, including extension of time fees, to Deposit Account No. 50-1070 and please credit any excess fees to such deposit account.

Respectfully submitted,

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